

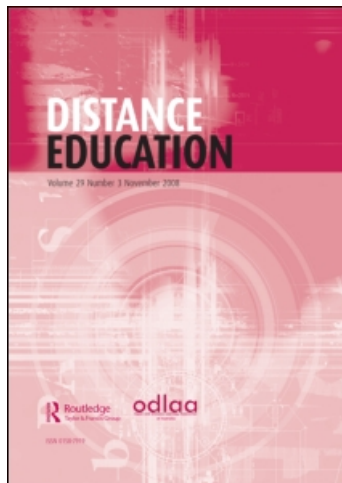
This article was downloaded by: [HEAL-Link Consortium]

On: 15 June 2011

Access details: Access Details: [subscription number 786636649]

Publisher Routledge

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Distance Education

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713412832>

Knowledge network — a new hybrid for learning systems

Kathleen Forsythe

To cite this Article Forsythe, Kathleen(1982) 'Knowledge network — a new hybrid for learning systems', Distance Education, 3: 2, 283 — 292

To link to this Article: DOI: 10.1080/0158791820030209

URL: <http://dx.doi.org/10.1080/0158791820030209>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.informaworld.com/terms-and-conditions-of-access.pdf>

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

Knowledge network — a new hybrid for learning systems

Kathleen Forsythe

The Knowledge Network represents a new hybrid for learning systems — synthesising the experience of open learning systems and educational television networks, integrally linking an existing educational structure by high technology carriers such as a communications satellite, cable television and microwave.

The network is the institution of our time; an open system, a dissipative structure so richly coherent that it is in constant flux, poised for re-ordering, capable of endless transformation.

(Ferguson, 1980)

It is appropriate that the non-profit society created in 1980 by the government of British Columbia to be a sophisticated electronic communication pathway and a catalyst for its use should be called the Knowledge Network. The thinking behind it was truly late twentieth century — synthesising the experience of open learning systems and educational structure by high technology carriers such as a communications satellite, cable television and microwave. As such, the Knowledge Network is a unique new learning system that has incorporated a variety of conceptual models and is demonstrating the power of their application.

THE IDEAS

For the Knowledge Network, 'Knowledge' can involve anything that may be known and is within the purview of the schools, colleges, universities, institutes, ministries and agencies of British Columbia. Know-

ledge may be general, and for all ages, it may be specific and aimed at a specific profession such as doctors or engineers. It may be accessed purely for the sake of human interest or learning, or for a formal credit or for professional training. 'Knowledge' may be part of a larger system of Knowledge involving books, kits and tutors.

The development of that system through telecommunications provides another dimension for the educational community to provide access to even very remote communities. It also allows them to begin to complement our highly-refined verbal teaching techniques with dynamic visual communication.

The 'Network' in Knowledge Network is as expansive a challenge as the 'Knowledge'. The Knowledge Network represents a multi-level and multi-faceted architecture of inter-connection, as sophisticated as a Gothic cathedral, as dynamic as a computer programme yet still dwarfed by the networking complexities of the human mind. The Network is an integrated hardware system using microwave, cable and communications satellite. It is a network of educational institutions. It is a network of programming and ideas. The significance is in the definition and understanding of the word 'network' in both the idea and the real 'hardwire' sense.

Networks are co-operative, not competitive. Networks represent a process, not a frozen structure. Networks have their stability in their internal relationships and interfaces and are fluid not rigid. Networks are lateral, not vertical organisations and each node can be the centre of the Network. Networks connect — promoting the linkage of members with other groups, other networks. Networks are an alert responsive form of social organisation. Information moves in a non-linear fashion, all at once, and in a meaningful way.

EDUCATIONAL INNOVATION

Yet educational innovation and its implementation has always been a risky venture. We have grasped at many techniques and devices as panaceas, only to find them faddish, or without substance, or answers to the wrong questions. It has become clear that successful innovation is dependent on its integration with existing structures. Dubrov suggests the following four aspects that must attend any technical innovation if it is to be given a chance to survive.

Hardware — the devices and techniques that make the innovation possible (e.g., a television set, a communications satellite);

- Software — the algorithm or knowledge processes that are used with the hardware (e.g., a computer programme, a television series);
- Teachware — the efforts made to teach people how to use the new innovation (e.g., workshops, training events, the innovation itself);
- Orgware — the organisational changes necessary to integrate the innovation (e.g., funding; personnel; structural changes in an organisation).

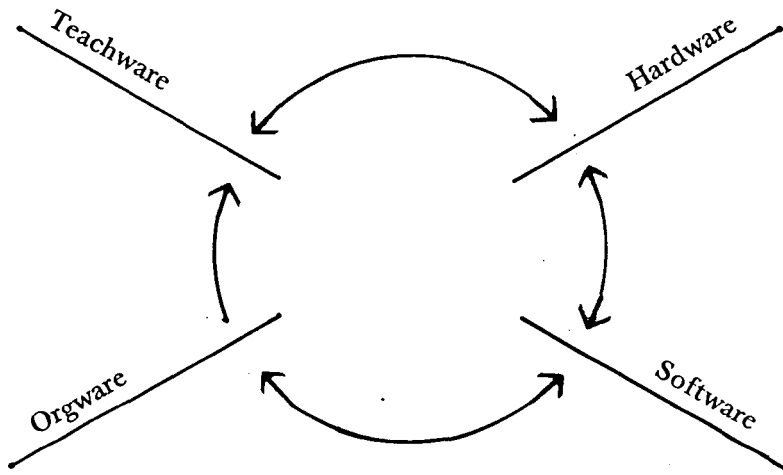


Figure 1.

THE PROCESS OF CHANGE

This is a highly complex process of change which can be at one time slow and cumulative or sudden and dramatic. The rapid emergence of the Knowledge Network over its first year has demonstrated the speed of implementation of process-oriented information systems. Yet, the future of the Knowledge Network will rest largely in the success of its interface with the existing system of schools, colleges, institutes, universities and government ministries, which are characterised by slow cumulative change. The tension that such a dialectic creates is symptomatic of the climate of the 1980s where the institutional structures of the past century encounter process systems made possible by informa-

tion technology. The current economic climate and its implications for public education and public service highlight the need for new ways to amplify human services. Although not a panacea, through resource systemisation the Knowledge Network represents one possible way to deal with the dilemma of maintaining human services in the face of financial cutbacks. In a province like British Columbia where distances are vast and the population scattered, the substitution of communication for transportation may well be an answer to rising costs in such human services as health care and training. Indeed the provision of continuing professional education by satellite for doctors, dentists, lawyers, even in the most remote communities, might well offset the flow of trained people back to the densely-populated areas.

THE LEARNING SYSTEM

As a non-profit society, the Knowledge Network has in its constitution two very specific mandates:

to establish and maintain and operate a telecommunications network

and

to assist, and collaborate with the universities, colleges, provincial institutes, school districts, ministries and agencies of the province in the development and delivery of educational programmes and materials.

The first of these will be briefly detailed below; the second mandate represents the significant conceptual idea that changes the Knowledge Network from an educational television station into a learning system.

Learning systems most recently have represented the attempt to use technology to provide learning opportunities for people isolated by social or geographic distance. For ten years, pioneers such as the Open University in Great Britain have provided university education for adults using an integrated system of television, radio, print packages and kits, tutors and local learning centres.

As an adaptive response, this effort at overcoming distance has emerged as a new educational methodology called distance education. As an innovative response, open learning systems represent an emergent new paradigm that attempts to answer the question of how to provide the resources and environments for people to learn.

That question does not assume that to have students come together in the same space at the same time is the optimum answer. It does assume, however, that the purpose of education is to put minds that want to

learn in touch with the knowledge and the means of learning, irrespective of distance and time.

New forms of communication such as data networks mean that information is no longer space-dependent or time-dependent in a cybernetic sense. The Knowledge Network as a *learning system* provides one way for institutions to explore other options of educating by providing a meta-system for communication, i.e., it will become a system that learns itself! However, it is only through co-operation with all of the various institutions that the Network can succeed.

THE TECHNICAL NETWORK

The inter-connection of communication devices, microwave, cable and communication satellite create electronic pathways that allow the Knowledge Network to provide a variety of services.

THE OPEN PUBLIC SERVICE

The first service of the Knowledge Network commenced in January 1981 and was only possible by access to Canada's ANIK B satellite as part of its experimental phase. A signal to this satellite is originated from the Network's distribution centre on the campus of the University of British Columbia using a Federal Department of Communications satellite up-link station. The 'footprint of the satellite' covers British Columbia, the Yukon, the MacKenzie Valley in the Northwest Territories and much of Alberta. It can be received by low-cost earth receiving dishes (TVRO's). Currently approximately seventy-five communities receive the signal. The 'dishes' range in size from 1.8m to 3m and are owned by Community Colleges, School Districts, Community Cable Television Companies, Community Societies. In most communities, the Network is carried by cable companies into people's homes. Learning centres in colleges and school districts are also being established as receiving nodes on the Network. The system provides a one-way video-signal. Inter-action is by telephone on land-lines and a nine-line teleconferencing phone system completes the system.

Using such a system, ninety-eight hours a week of educational programming is transmitted to potentially seventy-three per cent of the population of British Columbia. About thirty hours a week are produced 'live' with opportunity for phone interaction.

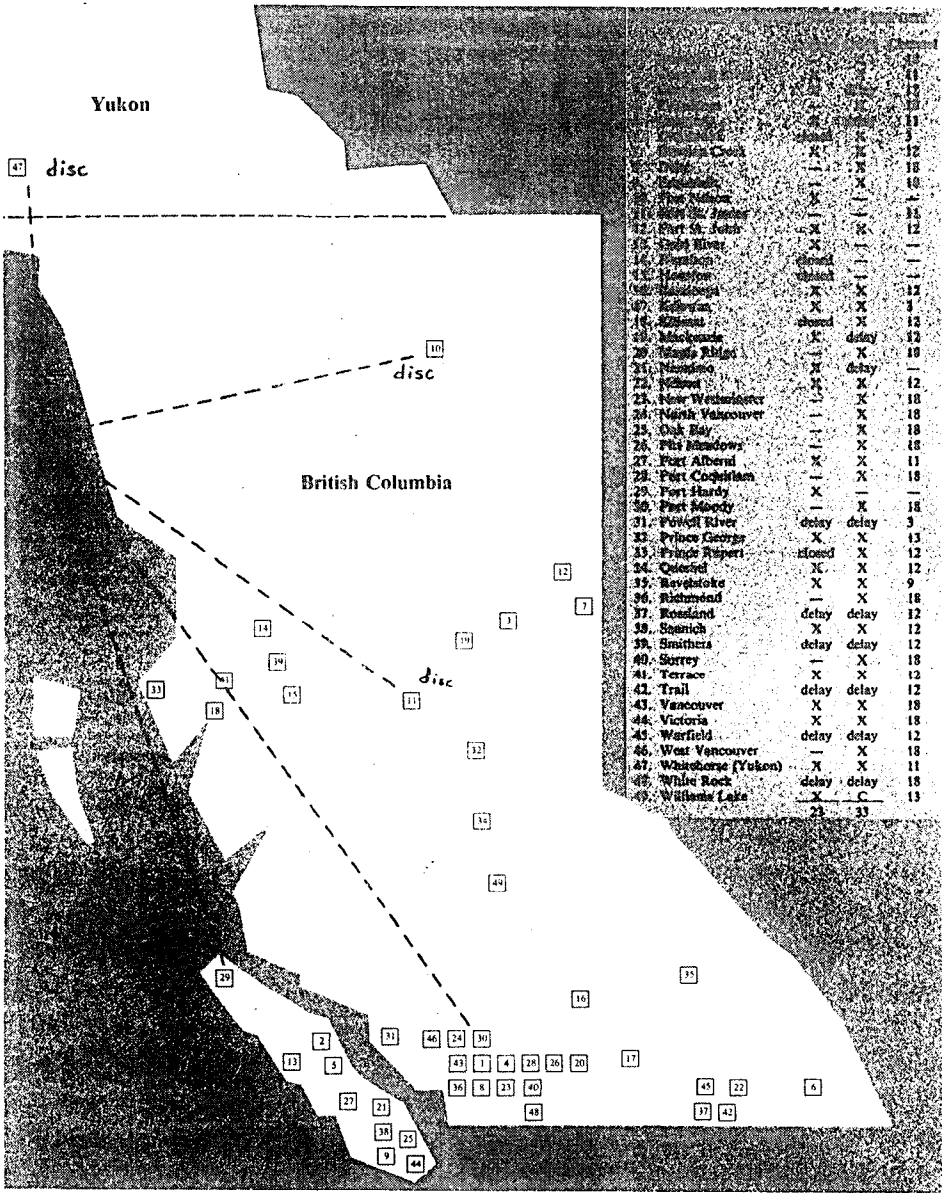


Figure 2. Knowledge Network System Report

Downloaded By: [HEAL-Link Consortium] At: 07:11 15 June 2011

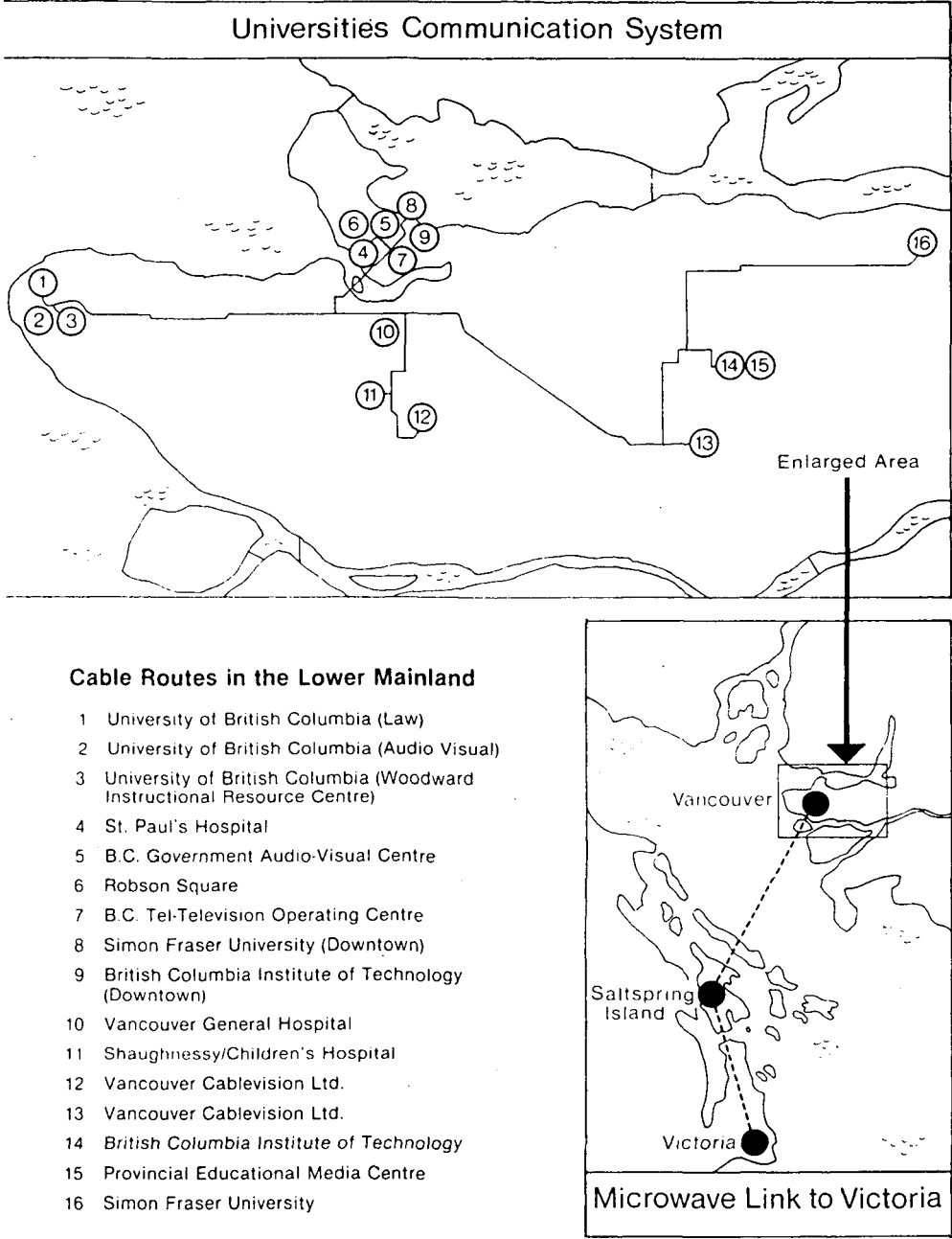


Figure 3.

The use of the satellite provided a dramatic new organising principle for communications in BC. However, the Knowledge Network envisaged many other types of network, all planned and integrated as a major tool for public service. These services include:

Imminent

- The Universities Communication Service — Commencing use in September 1982, this is a hardwire broad-band cable connection of teaching hospitals, law courts and universities. This will provide a potential twenty-eight closed-circuit channels in the Lower Mainland which will enable telediagnosis, data connection, conferencing and instruction between the connected institutions. By the interface with the satellite service, selected programmes from this service can also be made available throughout the province.

Potential

- A second satellite service
- An audio-teleconferencing service
- A data network
- An ITFS network

The complexity of the architecture of such interconnection is quite awesome to the educator and the public alike. Although each of these technologies has been used for education before, such a comprehensive and integrated service has never been attempted. This architecture is not centrally-controlled nor hierarchical, although it is centrally directed. Programming of the Network is decentralised in both the organisation and utilisation.

THE PATCHWORK QUILT CURRICULUM

Unlike the Open University, the Knowledge Network is not an institution and is not the sole determinant of the educational values of the programmes. Programmes must be sponsored by the public educational agencies in British Columbia. Thus the programming is a 'patchwork quilt' curriculum pieced together from an eclectic array of resources that have been acquired and adapted from elsewhere or developed in British Columbia. The patterning together of these various programmes to form a coherent service for the public is the responsibility of the Network with the assistance of those who provide the programmes and

those in the regions of the province who support their use on a local level. This represents a significant departure from many educational television networks, who choose the programming themselves or from centrally-developed open learning systems. By being a 'network', the Knowledge Network is representative of the emergent organisational principles that are non-hierarchical and not centrally-controlled.

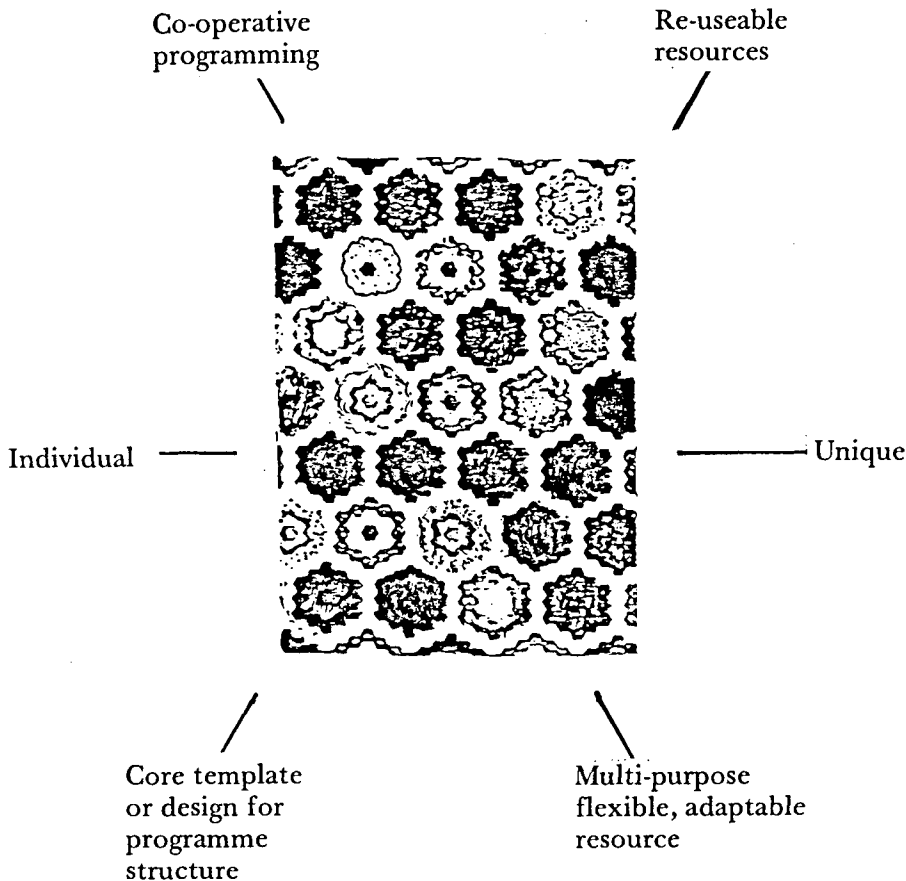


Figure 4. The Patchwork Quilt Curriculum

The patchwork quilt analogy should not be under-estimated. Based on the concept of use of existing resources, re-used in new ways, patchwork quilting developed into a sophisticated art form. As a social phenomena, it represented the combination of individual initiative (most patterns must be individually 'pieced' or put together around a core template or design) and community co-operation (the quilting

'bee' involved a co-operative approach to the overall fine stitching that gave the quilt its depth and quality). In the same way the Knowledge Network represents use of existing resources, re-used in new ways. Although each piece of the total programme has unique and individual content, certain patterns or designs for programme structure provide guidelines. The fact that the Network involves co-operation on many levels to stitch it together again accentuates the sophisticated creative function of a Network designed to be 'so richly coherent that it is in constant flux — capable of endless transformation'. The patterns of the quilt change with every season but the essential relationships remain constant.

This means that open learning systems like North Island College and the Open Learning Institute offer courses on the public service side by side with the University of British Columbia and the Ministry of Highways. At the local level, the community college or school district provides the support service in co-operation with the originating institution. They, too, may offer courses locally that are carried on the provincial system. The existence of such a telecommunication network at one time challenges the jurisdictional problems besetting a complex post-secondary system while providing a means to create a co-operative provincial system. Using innovative approaches by having everyone able to participate, such an organising principle of co-operative individuality allows for individual and local input and usage as well as providing a forum for province-wide co-operation to solve common problems.